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Title of Invention: Agent Product Road Map

Enclosed is a disclosure of the above-titled invention consisting of 26 sheets of description and 1 sheet of drawings. A check or money order in the amount of 10.00 is enclosed to cover the fee (37 CFR 1.21(c)).

The undersigned, being a named inventor of the disclosed invention, requests that the enclosed papers be accepted under the Disclosure Document Program, and that they be preserved for a period of two years.

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Agent Product Road Map

Version 1.0f

Updated on May 30, 2003 at 06:52 PM

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1. Overview

This document defines Agent's Product Road Map. This road map attempts to do the following:

- Outline the long-term strategic options for the Agent product line for the next 5 years so the Agent Design Team can make an informed decision about which path to take.
- Assist product development in making design decisions about short-term releases such as Agent 2.x. For example, the Road Map will influence the way we satisfy 2.x requirements such as "persona" and "multi-server".
- Map out an intellectual property strategy and look for patentable ideas or processes.

2. Conventions

Bold notes like this are instructions from the author to himself.

(CHRIS: Add this next. Currently this is in a separate spreadsheet)

3. Revision History

1.0c Wednesday, January 29, 2003 – Chris Beck – Initial Version

1.0b Friday, January 24, 2003 – Chris Beck – Preparation for offsite

1.0c,d Friday, April 04, 2003 – Chris Beck – WIP for Chuck's review
Added sections on Design Thesis and Design Details

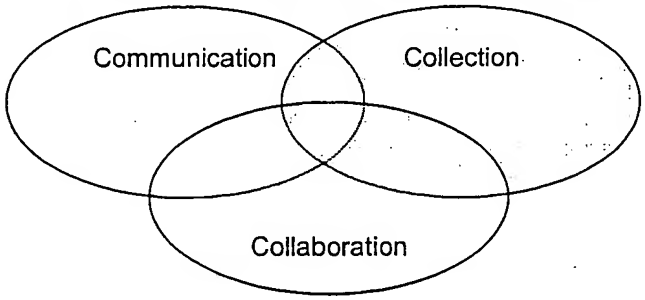
1.0e Thursday, April 10, 2003 – Chris Beck – Iteration for Mark Sidell review
Added the Digital Collection Platform strategy
Reorganized the Document
Expand the Identity Oriented Messaging strategy – especially the case study.

1.0f Added the Digital Collection Platform section.

4. Analysis

A. Behavior Model

On the Internet, there are three fundamental user behaviors:



Communication - interacting with other people via different *channels*: email, news, or instant messaging (IM), and voice

Collection - gathering digital content such as knowledge, art, music, software, contact information, newsletters, etc.

Collaboration - working with other people to make a decision, solve a problem, or perform a function.

All three behaviors are tightly coupled. For example:

- When I sell golf clubs on eBay, I communicate with prospective customers. As my business grows, I need to collaborate with co-workers to share the responsibility of answering customer messages. In the course of business, my co-workers and I collect and share knowledge and customer data.

- While building my digital music collection, I communicate and collaborate with other users to find the music we like. I may not know the true identity of the person with whom I'm collaborating. However, I know that person's preferences and I know how to communicate with them.

B. Communities

People communicate, collect, and collaborate in communities. A community is a collection of people who share a common bond or interest. We keep track the members of our community in order to communicate with them.

Users are conscious of many of the communities to which they belong: family, clubs, hobbies, school, church, and businesses. Other communities aren't as apparent. Consider the case of digital collectors. Collectors may not think of themselves as a traditional community. However, collectors exhibit many of the properties of a community:

- Collectors make an effort to:
  - Track the identities of other collectors who publish desirable content
  - Ignore publishers of poor content.
- Collectors collaborate on Usenet newsgroups to ensure there are no "missing parts" in movie and photo collections.

One of the key differentiators of communities is the degree of formality. Communities (such as businesses) are more formal and their structure is more overt. Conversely, hobby enthusiasts often lack any structure at all.

C. Identities

Your identity is the image you project to the members of your community. As such, your identity is one of the most important aspects of how you communicate. For example, your identity determines how you are perceived (and remembered) by others in your community.

On the Internet (and in real life) and we project many different identities:

- With friends and families, I am personable and informal. I make jokes. I divulge more about my personality. People know me on a first name basis.
- With friends, I often need different identities for each of my affinity groups: church, school, sports, hobbies, etc.
- When I'm working at Forté, I am professional and knowledgeable. The speed and accuracy of my communications are crucial to my image. I am concerned about my response time.
- I am part of a virtual business, Golf 4 Less, where I help friends sell golf clubs on eBay. It is crucial that I keep Golf 4 Less separate and distinct from my 9 to 5 job at Forté. I don't want people finding out that *chris@golf4less.com* is also *chris@forteinc.com*.
- At both Forté and Golf 4 Less, I need unique identities for each of the hats I wear. One identity is me as an individual. The other identities reflect the role I'm playing during that conversation: sales, support, or business development
- When shopping on the Internet or signing up for email newsletters, I must be very careful about the identities I divulge. My identity can easily be exploited. It only takes one shady vendor to ruin a perfectly good email address.
- When I explore the Internet after hours, I want total anonymity. I'm curious to try things and go places– especially on USENET. But, I'm afraid of leaving behind clues to my identity.

- When I collect binaries, I want to project different identities when collecting different media types (pictures vs. music) or genre (classical vs. hard rock).

With communities and identities, I can model my relationships with the people and organizations that matter to me. I believe this is the most fundamental way to define the rules that controls my email, news, or instant messaging software.

D. Collecting

Human beings have an innate desire to collect and organize items of interest. Digital multimedia and the Internet have fueled that desire to new proportions.

In the past collectibles were tangible and could not be reproduced. With digital multimedia, collectibles are intangible and easily transferred or copied with high fidelity. The Internet affords collectors with a ubiquitous medium for sharing their collections and interacting with other collectors.

However, there are very few tools designed to enhance the "Digital Collection Process" (see page 19) which is a highly collaborative. I believe that a significant part of that process is identifying the other collectors in your community who share your taste.

Examples of Identity Based Collecting already exist with companies like NetFlix. For example, Netflix can show me recommended movies from people who also like the movie I just watched.

E. Sharing

The growth and evolution of a community is governed by the ability of its members to share:

- My digital collection is getting pretty cool. I'd like to share some of my favorites with other collectors. I may do this by posting to a USENET newsgroup or sharing my collection over a peer-to-peer network.
- My golf club business on eBay is taking off. I need to easily share customer identities, customer interactions, and answers to frequently asked questions (FAQs) with co-workers.
- Our church is growing and I can no longer answer the mail going to *prayers@bridge2u.com*. I want to share that identity with other members of the congregation so we can answer prayer requests as a team.
- I want to maintain and share a directory of contact information for my son's hockey league with other members of that community. My assistant coaches will share a common identity or in-box to help me respond to email from families.

The need to share and collaborate is not always apparent when users create or first join a community. Many communities lack formality in the beginning. As we discover the need for collaboration, most personal communication products (except, perhaps, instant messaging) require significant infrastructure to begin the sharing process.

Traditionally, sharing involves setting up a server (e.g., FTP) in a client-server topology. However, this logistical overhead becomes a barrier to sharing. When Peer-To-Peer (P2P) topologies (e.g., Napster), came on the scene, collection communities grew dramatically because the effort to "plug into the network" and share were minimal.

5. Strategic Opportunities

When applying the analysis of the prior section to Agent, I see two potential long-term product strategies. These strategies are not mutually exclusive.

A. Current Perception of Agent

Currently, Agent is perceived as:

- The very best product for textual collaboration on USENET newsgroups.

- A pretty good product for collecting binaries on USENET. However, Agent suffers from a design that is not centered on the Digital Collection Process.
- A decent email client for users who've already mastered Agent for newsgroups.

B. **Identity Oriented Messaging (IOM)**

In this strategy, Agent would evolve from a platform that is largely identified with USENET to one that supports all communication channels: email, news and instant messaging.

Agent's primary competitive advantage would be a new paradigm called Identity Oriented Messaging. IOM guides users thorough the process of defining these entities.

Entity	Description
Zones	An metaphor for formal and informal communities
Identities	The Unique ways in which you present yourself to your communities.
Directories	A database of organizations, people and their identities
Activities	Workflows for shopping, buying, requesting or providing customer support, and subscribing to mailing lists and newsletters

The resulting knowledgebase becomes the basis for how messages are routed, prioritized, filed, and shared. Agent users will no longer be required to sift through giant inboxes or define complex, fragile rules for processing messages. They will simply define their world in terms of these entities and Agent will do the rest.

C. **Digital Collection Platform (DCP)**

Agent already contains much of the infrastructure for binary collectors.

In this strategy, Agent (or a derivative of Agent) would be re-packaged as a binary collection tool:

- Agent's existing user interface would be re-oriented toward the tasks that binary collector's perform.
- Agent's binary collection capabilities would be expanded to encompass more of the use-cases that make up the Digital Collection Process (see page 19).
- Add **Identity Oriented Sampling**, a binary sampling workflow based on Agent's knowledgebase of Identities and Zones. This technique allows users to find collectibles that are published by collectors with similar taste.
- Reposition Agent's database as a **Digital Collection Repository** that can be manipulated with other tools and viewers -- even the operating system. If the binaries in Agent's data store could be accessed through Windows Explorer, then it would be trivial to publish full or partial collections on peer to peer (P2P) networks.
- Create a **Collection Markup Language (CML)** that is used for tagging binaries with descriptive meta-data that can be used to enhance the Digital Publishing and Collection Process.

D. **Other Strategies**

(Chris: Outline any other possibilities)

E. **Pros and Cons**

This is an early (and incomplete) list of observations about the value of each strategy

- IOM is a better long-term business opportunity than DCP because it allows us to penetrate the email market which is much larger than just USENET.

- Conversely, we must be careful not to abandon our bread-and-butter USENET users and their recurring revenue. I believe IOM is useful to both.
- DCP is likely to produce more short-term revenue because of our current brand awareness among the USENET rank-and-file.
- Both IOM and DCP are potentially good patent positions.

F. Commercialization

Ultimately, I believe we will employ a combination of both the IOM and DCP strategies.

Furthermore, I believe we should create three separate Agent products, Email, News, and Collector. They will all plug into an integrated platform, but each product will have unique features targeted toward potentially different markets.

6. Identity Oriented Messaging: Overview

A. The Problem

Users are overwhelmed by the volume of email they receive. They must have a strategy for

- Sorting and prioritizing incoming messages
- Following up on outgoing messages to ensure that activities get completed
- Sharing the workload when it becomes more than they can handle.

In today's email and news programs, the user must define explicit rules about how to process (e.g., route, prioritize, sample, file and share) email and news messages. But, explicit rules are problematic for several reasons:

- Users must understand how to create and maintain the rules database. This is challenging for even the most technical or disciplined user because rules databases don't model anything the user understands.
- Once the rules database gets above a handful of rules, it becomes extremely difficult to conceptualize what is happening. Common tasks like inserting new rules to route messages to an inbox becomes challenging.
- When the user is busily focused on answering messages, it is very difficult to *task-switch* between rule definition workflow and message workflow.
- It's too easy to make a mistake. When things go haywire, the user loses faith in the rules system and resorts to a manual mechanism.

B. The Solution

Fortunately, there is a better way. When pre-processing a message, there are two kinds of analysis:

Analysis	Description
Content	∘ Looking at the content of the message and determining what the originator was trying to say. ∘ Analyzing a new message and compare it to existing messages in order to determine their similarity.
Identity	Looking at the sender and recipients and 1) our knowledge of the communities to which they belong and 2) our past history of interactions

To date, the messaging industry's effort has been centered on content analysis. For example, there are programs that try to determine whether a message is junk mail (or SPAM). Other programs attempt to figure out what the originator is trying to say and, perhaps, respond automatically.

Conversely, there is little work in the area of Identity Management, Identity Analysis, and Identity-Based Processing.

My thesis is this: If you build a messaging platform that is centered on these concepts, you can boil message processing down to a few simple, reliable rules that are based on identities. In essence, you are building a model of yourself and the way in which you interact within your communities.

Furthermore, you can share (or publish) portions of your identity model with family, co-workers and the other members of your communities. The result is network of users that work synergistically to manage identities and influence message processing within the community.

C. Identity Management

Identity Management is the ability to:

- Define all the identities that you personally use to communicate with the outside world.
- Define all the identities that you share with co-workers in order to communicate with the outside world.
- For each personal or shared identity, determine how it should behave over each communication channel: voice, email, news, instant messaging, etc.
- Build a directory of the people, organizations, groups, lists, businesses, and sites with which you communicate and define the known identities for each directory entry.
- For any personal, shared or constituent identity, define the degree of privacy, anonymity, permanence, and priority of messages involving that identity.

As the Internet has evolved, multiple identities are fundamental to the way we interact. However, there is no *communication product* that makes identity management a primary architectural consideration.

Most personal email programs (Outlook, Eudora, The Bat!) are organized around physical accounts (e.g., POP boxes). This was adequate in the early days of the Internet when we typically had only one email address and identity theft wasn't an issue.

D. Identity Creation Service

There is no simple way to instantly create ad hoc identities to perform specific tasks such as shopping and subscribing to newsletters. Instead, each time we sign up for a newsletter or product information, we face the risk of compromising our identity.

Forté will provide an Identity Creation Service where users can create disposable, anonymous, and ad hoc identities. For example:

- A Disposable Identity might be used for shopping because you know it will eventually be compromised.
- An Anonymous Identity might be used on a newsgroup where you don't want it to be traced for your own protection.
- An Ad Hoc Identity is the ability to create *on-the-fly* identities as a side effect of composing an email, news or instant message.

E. Identity Protection

Allow the user to create communication zones where messages, directory information, and identities are protected within an Identity Firewall. For example, the user might create a zone where communication for an eBay business is to take place. The identities for the eBay business could only be used within this zone. This would prevent users for accidentally

compromising an identity. Furthermore, the user would be alerted to any compromising situations such as a contact from your work zone sending an email to your eBay identity.

F. **Identity Analysis**

Identity Analysis is Agent's ability to examine a message (incoming or outgoing) and resolve all the identities. Then Agent can report on any policy violations and firewall issues. For example, Agent can:

- Warn me if I send or receive a message involving the domain, *forteinc.com,* while conducting business as *golf4less.com*
- Advise me if I receive a first-time message from a new contact.
- A new recipient is added (or dropped off) from a multi-party email conversation.
- Process any rules associated with those identities

These are other extensions to the identity analysis process:

1. **Detecting New Identities**

   If Agent has Bayesian Statistical Analysis, it should be able to recognize new mail from an existing contact that has changed their email address. For example, the sender's signature line might be the same. This technique might work best for newsletters where there is a larger corpus of similarly styled messages.

2. **Existing Thread Detection**

   Identity Analysis and / or Bayesian Statistical Analysis may also work for detecting messages that are part of an existing thread, but haven't maintained the references header.

G. **Identity Oriented Processing**

Agent will utilize its knowledgebase of identities to route, sample, and prioritize the processing of messages. The mental model for this process will be a simple hierarchy.

1. **Is there an Explicit Rule?**

   Agent's existing rules will fire first. This provides users with a way to override any identity oriented behavior. This also ensures that Agent will continue to work properly for existing users.

2. **Is there a Directory Identity Rule?**

   Have I defined a incoming or outgoing routing behavior for:

   - The organization or community to which this sender belongs
   - This sender, regardless of identity
   - A particular identity for this sender

   My wife works with me at Forté. When she sends mail using *ana@forteinc.com*, I consider it part of my work community. When she sends mail using *ana@ibeck.com*, I consider it family.

   When anyone from my church (an organization in the directory) sends me an email using our church domain, *bridge2u.com*, I want that to go to my church inbox.

3. **Is there a Personal Identity Rule?**

   When anyone directs an email to my church identity, *chris@bridge2u.com*, that message should also go to my church inbox.

   I believe users can easily grasp this simple 3 stage rule hierarchy since it:

- Models the real world:
- Going from the more general case (the Personal Rule) to the more specific case (the Directory Rule).
- Provides a global override (the Explicit Rule).

See the Case Study on page 13 for more examples.

H. Automatic Directory Creation

I can configure Agent to automatically create Directory Entries for me. I turn this on for Golf 4 Less because I want to automate the creation of a mailing list for this community.

1. Automatic White-Listing

For most of my identities, I have automatic white-listing turned on. This feature automatically white-lists any directory entries that I reply to. The assumptions are

- I would never reply to someone who sends SPAM.
- I would only reply to someone whose messages *should* pass through any SPAM filters I have.

The net effect is to dramatically reduce false positives for contacts with which I've had previous dialog.

I. Lightweight Messaging Workflow

The key to successful communication, collection, and collaboration is workflow. Workflow ensures that messaging tasks are apparent, prioritized, completed and filed in accordance with basic procedures. Consumer email and news software provides very little in the way of workflow. Consider these most basic needs:

1. Response Time

Inform me if any messages sent **from** customers **to** mybiz.com are more than 48 hours old.

2. Follow-up Intervals

Inform me if any outgoing email **from** mybiz.com **to** suppliers remains unanswered in 72 hours.

Inform me if any postings in *alt.comp.software.financial.quicken* remains unanswered in 72 hours.

Outbound workflow is crucial in tasks when I am seeking technical support. Without it, I must remember to follow up.

3. Subscriptions

I've signed up for newsletters from the Wall Street Journal and Information Week. I like to read the WSJ every day. I'd like to archive Information Week and read it once a week. I should be able to define this logic as part of managing my subscription.

4. Sampling

On a newsgroup of music or pictures, I'd like to sample the content to find the identities of posters who provide content that I like. Binary news groups are actually a large collection of smaller collections organized by poster. I'd like to quickly sample all the posters in a newsgroup, and then mark the rest of their collection download.

Response Time and Follow-up Interval can be defined in terms of identities. For example, my church team wants to follow-up on all Prayer Requests in 24 hours or less.

J. **Filing and Retrieval**

Email users spend an inordinate amount of time filing messages with very little return on investment. Invariably, we are not disciplined enough to make our filing strategies work.

I propose that most filing strategies are organized around communities, identities and workflow (e.g. priority and status) anyway. So, I believe that a messaging platform that designed around these entities would mitigate the majority of filing work.

(CHRIS: Do a usability study on this)

Agent's identity management will provide search mechanisms by thread, identity, contact, organization and community. Agent's workflow will also provide search and filter by activity or status

K. **Sharing**

A shared in-box (or queue) allows more than one person to conduct message response workflow safely in a single in-box. The rules of engagement can vary:

- Two or more users replying with the exact same identity
- Two or more users replying with the exact same email address but slightly different identities. For example, the signature line and / or email address comment field may reveal different identities (e.g., "Mark Prince" support@mybiz.com, "Jeffrey Kaplan" support@mybiz.com).
- Two or more users replying with completely different identities.

Workflow is especially important when users are sharing sensitive information such as identities, in-boxes, or customer data. Workflow in this context is the ability for users to have a clear-cut set of user interface actions that promote safe sharing.

Sharing rules are also defined in terms of identities. For example, I share all the directory entries for my hockey team, the Kings, with the other coaches and players. Fellow coaches use Agent to replicate the directory and a shared in-box for our team. The families of the players (many who don't use Agent) can access the shared directory using Lightweight Directory Access Protocol (LDAP) which is supported by nearly all email clients.

Sharing interaction history (e.g., past email threads) is another option. For my hockey team, I am willing to share interactions with the other coaches that were conducted with the shared identity, *coach@kings.highslot.com.* However, personal communication using *chris@highslot.com* would not be shared.

7. **Identity Oriented Messaging Case Study**

A. **Overview**

This is an ongoing case study of my messaging world. Over time, I will add additional examples beyond my Shopping Thread. I encourage other members of the Agent Design Team to model their worlds in an effort to help iterate this design.

B. **Zone Model**

(CHRIS: Add this. Currently, it's in a separate spreadsheet)

C. **Shopping Thread**

I shop at Buy.com. During purchasing, Buy.com asks the user for an email address, but doesn't indicate how that address will be used. Is it for support? Is it for promotions? Is it for junk mail?

In most cases, businesses like Buy.com only track a single customer email address and use it for all communications. Furthermore, Buy.com constantly uses different from addresses

which can foil any *filters* the user might have set up. If the user has to write explicit rules for Buy.com messages, it can get very complex, very quickly.

Instead, the user should subscribe to Buy.com with an ad-hoc, disposable "Shopping* identity (e.g., chris@shopping.anonymous.com) which supports this implicit routing rule:

- Any messages sent **to** this Shopping identity go to the Shopping Inbox.

The first message the user might get from Buy.com is an order confirmation from *orders@buy.com*. In turn, the Shopping Inbox tells the Directory to automatically create a company entry in the directory for the domain, *buy.com*.

Within the Shopping Inbox, the user flags this message as an "Order Confirmation". This, in turn, tells the Directory that messages from *orders@buy.com* or messages that look like this message (based on message content analysis) are, in fact, from the "Customer Service" identity at Buy.com.

The user has built up another identity-based routing rule.

- Any messages sent **from** a Customer Service identity is routed to the Shopping Inbox.

The next message the user receives from Buy.com is a promotional announcement from promos@buy.com which automatically comes to the Shopping Inbox because it was addressed to my personal Shopping identity.

In the Shopping Inbox, the user flags the message as a "Promotion" by dragging it into the Promotions Inbox. As a side effect, the Directory creates a new "Promotion" identity in the Buy.com directory entry that is mapped to promos@buy.com. The user has built up another identity-based rule:

- Any messages sent **from** a Promotion identity are routed to the Promotions Inbox.

So, over time, the user is building a corpus (or body of knowledge) about how to process both messages from Buy.com and messages from Customer Service and Promotion organizations, in general. Much of this knowledge is inferred from the user's identity and the directory identities for Buy.com.

Furthermore, two or more users could share their bodies of knowledge about Buy.com to improve Agent's ability to recognize and process messages from Buy.com.

Essentially we've isolated the act of Identity Analysis from the act of Message Processing. We still have rules for processing messages, but they are simple, high-level rules based on identities.

8. **Identity Oriented Messaging: Milestones**
9. **Identity Oriented Messaging: Requirements**

This section will eventually get very detailed. For now, I'm just recording the *most interesting* requirements that impact the current high-level design.

A. **Multiple Identities and Communities**

Requirement: Users belong to multiple communities on the Internet.

Requirement: Users require multiple identities on the Internet.

There isn't a 1:1 mapping between identities and communities. IOW, one identity may serve several communities. Conversely, users may want several identities for a given community.

B. **Identity Protection**

Whether it's your email address or your phone number, no one likes an invasion of privacy. On the Internet, email address are sold and exploited by SPAMers. When you give out an identity, you are exposing yourself to exploitation.

Requirement: Users want a communication platform that ensures their identities are never compromised.

C. **Identity Firewalls**

Requirement: When users have multiple identities, they frequently require identities that remain separate and distinct.

For example, users may want to separate their Personal, Business, and Collection identities. The want to make sure that one identity never leaks over into another.

This is closely linked to the **Sharing** requirement discussed later.

D. **Directory Separation**

Users often want to maintain separate directories (i.e., contact lists or address books) for each community / identity. Frequently, this information is shared with other members of the group (i.e., a Church Directory)

E. **Identity Selection**

When users receive an email, they want to be sure to reply with the right identity. The communication platform should ensure that users use the correct identity.

1. **Addressing Errors**

Frequently, outsiders choose the wrong identity when sending email to us. Users require a mechanism to redirect these messages to the correct community / identity.

F. **Workflow**

In this context, Workflow is defined as any actions or processes that improve our ability to communicate, collaborate, and collect.

Users often require unique Workflows for each community. For example, my eBay Golf business may have a target response time of 2 days or less. Conversely, my Home community has no target.

Other Workflows are orthogonal to communities and identities. Consider the case where new messages are scanned across all identities to look for high priority messages. An emergency may arise in any of your communities.

Requirement: Users require the ability to define unique workflows for each community.

Requirement: Users require the ability to perform common workflows across all identities.

This dichotomy has profound impact on the user interface. While the user may have a mental model of their communication world in terms of communities and identities, they often need to process it in terms of media type (email vs. news) or priority.

G. **Priority Routing**

Users want to prioritize the email response process.

H. **Messaging Filing**

Users want to organize messages for searching and browsing.

I. **Message Sampling**

Newsgroup users want to sample messages in order to find content that is to their liking. Users want to avoid content that is repulsive or inconsistent with their taste.

10. Identity Oriented Messaging: Design

This section presents a detailed design that attempts to satisfy all the requirements in the previous section.

A. Design Goals

Minimize the amount of re-configuration for existing Agent users to be able to take advantage of IOM features. In particular, ensure that existing rules and configurations continue to work after the migration.

B. User Interface Prototype

(CHRIS: Integrate your prototoype)

C. Zones

Zones are user-definable harbors for safe communication. Each zone is protected by a software firewall to ensure that messages, contacts, and identities are never compromised across zone boundaries.

The user's mental model for a zone must be very clear. It is a boundary. Furthermore, users must know which zone they are in at all times. If there is ambiguity about the "current zone" or its boundaries, the user will lose faith in the mechanism.

For some applications, zones are equivalent to communities. I create a zone for my hockey team. For other applications, zones might equate to activities. I create a zone for collecting music on USENET.

Upon install, Agent 3.x will suggest the following initial zone configuration:

Zone	Description
Personal	Communication with friends, family, and other personal affinity groups
Work	Work-related communication with colleagues and partners
Shopping	Messages from web sites that offer deals or bargains. In many cases these are an unwanted side-effect of some valid communication.
After Hours	What you do here is your own business. This may include your satisfying your appetite for collection.

Over time, users will add new zones. For example, they might create a new zone to handle a side business on eBay. Over time, users will split or combine zones. For example, a user may prefer to split off a separate zone for one of their affinity groups (e.g., soccer or hockey club) that used to be part of my Personal zone. Or the After Hours zone might be split up between Music and Movies.

(Chris: Note) The process for splitting zones must be defined.

It should be noted that zones may be a level of formality that users simply don't want. For whatever reason, they are simply not concerned with identity protection. Furthermore, they may simply want to use Agent as a newsreader.

It should also be noted that zones are not message route points. They simply containers for the folders that are message route points.

It is important to look at each major entity and define its relationship to a zone.

There will be a **Zone Creation Wizard**.

D. Accounts

Accounts are Agent's mapping to the physical world and must transcend zones.

The reality is that users will have POP accounts and NNTP servers that supply more than one zone (or folder)

With news, I may subscribe to rec.pets in my Personal zone and subscribe to comp.groupware.lotus-notes in my Work zone. Both newsgroups may come from the same server (or group of servers in a multi-server configuration).

Conversely, I may subscribe to a private news-server which contain groups that should only be visible in my Work zone. As such it may be necessary to restrict an account to a particular zone.

With email, I may have a single inbox that receive email for multiple addresses and / or domains. However, it should be noted that the more common model is for one POP box per email address.

E. Identities

Identities are also contained within zones. Agent will promote the mental model that identities are protected within the zone. Conversely, each zone must contain at least one identity. Identities support several properties types:

Property	Description
Routing	properties that influence messages are routing and pre-processing. For example, the primary email address (and any aliases) will tell the account manager where to route the messages that it collects
Response	properties such as signatures and quoting styles that are used to respond to messages.
Sharing	...
Privacy	...

F. Folders

Folders are route points where messages are initially filed after they've been collected from the various accounts. The following table defines each channel of communication and the types of folders that Agent supports.

Channel	Folder Type	Description
SMTP Email	**Inbox**	Ad hoc communication between email recipients
	Mailing Lists	List servers that provide many to many discussions (similar to NNTP News) over an email transport
	Newsletters	Subscriptions to periodic message broadcasts from organizations or news sites.
	Queues	Email inboxes with structured workflow that can be processed by one or more users.
NNTP News	**Collaboration**	Newsgroups that are centered around text communication
	Collection	Newsgroups that are centered around binary collection
	Moderated	Collaboration Newsgroups that are moderated
Instant Messaging	**IM**	The different classes for this channel are not yet understood.

Folders are contained by zones. In other words, the same folder cannot exist in multiple zones. Each zone must contain at least one folder.

G. Directories

(Chris: Must Spec)

H. Activities

(Chris: Must Spec)

I. Message Processing Algorithm

Here is one proposed algorithm:

1. Is there an explicit rule (Agent's existing mechanism) match?

2. If not, is there a directory match?
3. If not, is there an identity match?
4. If not, file it in the Sandbox, a built-in Zone for unsorted messages.

Explicit rules are at the top of the priority list to ensure that existing users experience a smooth transition during an upgrade.

11. Identity Oriented Messaging: Ideas and Issues

A. Anti SPAM

B. API / Scripting Interface

The message routing process should have intercept points where user-defined scripts or programs can run.

C. Task Oriented UI

The usage UI may be very different from the configuration UI. IOW, the configuration UI is centered on Zones. Within each zone, there is probably one or more primary inboxes that you constantly want to monitor. The right interface for this might be a shortcut or bookmark metaphor where you can scan for all your high priority messages in one place.

D. Identity Variability

Users may want to use the same Identity in multiple ways. For example, the signature line may be different in certain scenarios. This might be accounted for in the user interface by allowing the user to override certain identity properties during message composition.

E. Rules Audit Trail

Agent will provide an audit trail of which rule was responsible for routing a message. The user interface will likely be a control on the email body pane.

F. Out of Office Workflow

How would we define this across all zones and identities?

12. Digital Collection Platform: Overview

A. The Problem

On of the best ways to spot a great opportunity is to look for users customers who are trying to solve problems with tools that were not intended for that problem.

In the beginning, USENET was designed to be a many to many discussion medium that overcame the limitations of email when:

- Discussions involve 3 or more people.
- People want to easily join discussions that are in progress.
- Discussions are long running and conversation threads are difficult to follow.
- People want to follow a large number of discussions about a special interest.

As it turns out, many of the original benefits of USENET also satisfy some basic requirements of Digital Collectors by providing a forum for

- Sharing their collection among a large group of people.
- Discovering new art.
- Collaborating to increase one's collection
- Some degree of anonymity. After all, sharing this content is frequently a violation of existing copyright laws. Over time this may change.

After a use-case analysis of digital collection, it becomes apparent that USENET only provides these basic services:

- A fairly reliable transport mechanism (a place to POST and GET the digital content)
- An unstructured communication channel that knows nothing about the semantics of collection within a particular domain.

B. Taxonomy of Digital Collectibles

Domain	Type	Examples
Knowledge	**Text**	Support, Research, Self-Help, Technical, Game, Fan, Sports.
Photos	**Binary**	GIF, JPG
Movies	**Binary**	AVI, MPG, WMV
Books	**Binary**	Electronic Books
Music	**Binary**	MP3, MIDI, WAV
Games	**Binary**	PC, Playstation, Nintendo
Software	**Binary**	PC, PDA Programs and Utilities

C. Use Case Actors

Actors[1]	Roles
Collectors	People who consume (collect and classify) Text and Binary content.
Posters	Users who publish Binary content. They tend to use dedicated posting programs like PowerPost 2000
Collaborators	Users who create, iterate, organize and refine Text and Binary content. Moderators are a distinct, formal subset.
Disruptors	SPAMers, TROLLS, MEOWers, Tin Foil Hats
Problem Solvers	People who treat USENET as a Help Desk. Often they just search (Google Groups) or post a single question / thread.

The original actors on USENET were Knowledge Collaborators, Knowledge Collectors and Problem Solvers. Agent is ideal for this group with the best navigational experience for their needs.

Now, the dominant actors are Binary Collectors. Agent is pretty good at the monitoring and accessing Binary postings, but not so good a the broader "Digital Collection Process".

D. Digital Collection Process

This table breaks down the individual uses cases within the Digital Collection Process and estimates Agent 1.94's current ability to perform that step on a scale of 1 to 10.

Use Case	Agent	Description
Finding	**4**	Determining where the useful content exists. Competitors like NewsRover had provided additional indexing and search services.
Monitoring	**9**	Keeping up to date on groups or individuals that were previously found
Sampling	**3**	Previewing a subset of content based on subject, genre, and publisher or poster identity.
Downloading	**8**	Retrieving the files
Verifying	**3**	Ensuring download integrity by checking for viruses or missing

[1] In use-case analysis, an actor is a unique role that is played by a user in a system.

		parts
Completing	**4**	Finding any missing parts – either large collections of small binaries or large multi-media binaries using compaction and splitting schemes like RAR and PAR
Screening	**1**	Screening the collected files to determine their value
Classifying	**1**	Sorting, tagging, and rating the files
Pruning	**3**	Disposing of marginal content
Enjoying	**1**	Looking at and listening to your collection over time
Sharing	**1**	Sharing your collection with other collectors by re-posting
Archiving	**1**	Saving or discarding your collection posterity

It should be noted that this is an iterative, non-linear, process. The use cases of Monitor, Sample and Download may happen over and over before verifying and completing are done.

E. The Problem (Continued)

Agent is good at Finding, great at Monitoring, and very good at Downloading (thanks to yEnc). Agent is not very good at Verifying through Archiving which are the real essence of Collecting.

Agent users request features like Preview and Screening, but they have other programs dedicated to these functions like PhotoShop, ACDSee, Ifram, Windows Media Player.

However, I also believe there is a void between what Agent does and what Viewers do. The void begins in the Sampling use-case and continues up to Classifying.

When users started asking for larger DAT files, it resonated with me. Users are trying to use Agent as a repository for their collections? If they were simply forgetting to purge, they wouldn't want to stretch their archive. So, why not let Agent act as that repository?

I propose that Agent **should be** the collection repository for every stage or until the User has a compelling reason to detach. The longer the Binary stays in Agent, the greater the value we deliver to the Collector.

F. The Solution

Agent should provide an API / Interface to the world as a *Collection Data Source*.

One design is for Agent to expose its underlying database as a **Drive Letter** in Windows Explorer. This way, any program (including and especially the operating system) can manipulate the *Collection*. For example:

- I can view and discard binaries with ACDSee while Agent is downloading.
- Combine this with the ability to modify Agent's Task Queue and I can abort collection of all binaries by this Artist, Author, etc...
- Provide a mechanism to tag additional file attributes like **Jazz, 80's** then filter and sort on these.

Agent Folders and Groups would appear as Operating System Folders and Groups and Collectors can share Agent Folders across Peer 2 Peer networks. Users can create Collection Teams and fill in their collections from other P2P users.

This would also be very interesting for email. Each inbox could appear as a folder and the attached files could easily be navigated. The file name might be "2003 Budget from Chuck Knuff" where Agent uses its knowledge of identities to more richly describe the name. Agent could also offer this as a view within its own message pane.

13. **Digital Collection Platform: Milestones**
14. **Digital Collection Platform: Requirements**
15. **Digital Collection Platform: Design**

I estimate that over 95% of all binary content is posted as a "series" (RAR, JPGs) of roughly 10-200 messages. Sometimes there are one or more *series descriptor* messages (e.g., an NFO file or a Thumbnail Index), sometimes there aren't.

Bulk Posters (e.g., PowerPost 2000) help to a degree by providing consistently formatted message headers. Great for the naked eye, but Newsreaders struggle to parse this out.

So I struggled to wend my way through this arcane, unstructured way of describing messages within a series.

A. The Series

I believe the series is the most important entity in the digital collection process. But USENET lacks any reasonable semantics for describing a series.

Consider the JPG series. Here are the users tasks:

- What is the genre or sub-genre of the series?
- What is picture resolution? Does it meet my standards?
- Who are the actors? What is the script?
- What is the identity of the poster? Do I like their content?

Now, consider the RAR series. Before the Collector can even begin the collection process, they have these additional tasks:

- Understand what the Hell a RAR series is.
- Determine if the RAR series is complete.
- If not, can my Newsreader get the missing messages / sections.
- If not, can I reconstruct from the PAR.
- If so, begin the download.
- If not, consider requesting a repost.

In nearly all cases each RAR series is part of a larger, genre-specific series. For example, in alt.binaries.multimedia.24, the entire group is the television series and each RAR series is just an episode.

The series is also a form of expression. It can align with an established series (e.g., the songs on a CD or the episodes in a show). OTOH, it can be the poster's unique expression (e.g., a unique playlist or a *best of* picture series or a multimedia expose).

B. Sampling And Consuming

I believe sampling is most fundamental act of digital consumption.

But, sampling on USENET is a very strange experience. It's like a bizarre smorgasbord. Every meal you'd ever want is there. The deserts are mostly separate from the entrees. But when you go to the desert line, all the deserts are jammed into one humongous steam tray. You can see the cobblers floating around with the tiramasu, but if you want the peach cobbler, you really have to work at it. In the end, you might eat your fill, but it left a lot to be desired.

On USENET sampling and consuming is an iterative process

- First, I sample a Group

- Then, I sample one or more Series in the Group
- Then, I sample one or more Files in the Series
- If I like it, I consume the rest of the Series
- If there are similar Series (Poster, Actor, Singer), I want to find them, sample them, and consume them.
- If there is a common pattern to my consumption, I want to automate it with a rule.

The fundamental problem with binary USENET is that there is no easy way to do steps 2-5. Step 6? IMHO, the current state of filtering is just a giant HACK to overcome the lack of any relevant metadata.

C. **The Solution**

I believe Posters and Collectors need a rich, open, extensible, structured language for describing, sampling and consuming a "digital series" - DCML - Digital Collection Markup Language. This will be an XML dialect that is finely tuned to the art of describing and sharing digital collections.

D. **Agent Poster**

Forte will build a separate utility program, Agent Poster, that integrates with Agent. I'm not sure about the exact feature demarcation between the free and licensed versions so I'll describe everything in this document as Agent Poster or Agent

Agent Poster will do everything PowerPost 2000 can do (including yEnc). It will also automate the creation of a Digital Series Markup file which will be embedded in the first message of the series like this:

Message 1: Series Markup File
Message 2: JPG 1 of 5
...
Message 6: JPG 5 of 5

E. **The Markup**

The Series Markup File will (at a minimum) contain a Series object and a collection of Element objects that are roughly described as follows:

1. **Series Object - describes the series**
   - Series Name
   - Number of Files
   - Number of Messages
   - Size in Bytes
   - IsElement - is the Series just a single Element that was RAR'd
   - Poster Identity
   - Comments
   - Actors
   - Rating
   - Newsgroup
   - References; (e.g. URL to the Band's web site)

2. **Element Object - describes an element in the series**
    - File Name
    - File Size
    - Media Type
    - Resolution
    - Thumbnail Image
3. **Common Properties - described as needed at the Series or Element level**
    - MessageID(s)
    - Genre
    - Author
    - Actors
    - Rating
    - Date - when the picture was taken
    - Comments

Where possible, Agent Poster will fill in this metadata (e.g., size, resolution) automatically by evaluating the files in the series. Agent Poster prompts the Poster for any other attributes.

When the series is posted, Agent Poster will post the meta-data two ways. One way will be a plain text tabular view for newsreaders that don't render DCML. The other will be the DCML

When Agent Poster posts, it will share resources (Servers and Ports) with Agent to complete the posting tasks.

F. Rendering a DCML Series

When Agent downloads headers, users can configure Agent to automatically download message bodies that contain DCML Mark-Up.

Agent will transform the DCML into HTML with hyperlinks and image thumbnails. The visual model for an image series will be similar to the way a thumbnail JPG looks today, but it will be interactive. To sample an image file, the user would simply click on the thumbnail.

Agent will contain menu options to do things like get the remaining images in the series.

Agent will contain two new hierarchical views for series-oriented browsing:

- Series by Date
- Author + Series by Date

In the series hierarchy, the root node will be the Markup File and it will expand to show the series elements. Or users may prefer to simply work from the body of the Markup File with it's hyperactive thumbnails. IAE, the message list size is reduced by the average size of a series (somewhere between 10-200).

G. Poster / Collector Interaction

DCML will also add structure to formalize the interactions between Posters and Collectors. Consider these two most common transactions:

- Request Repost - directed mainly at a Poster
- Request Content - directed to the Group

Agent users can initiate these transactions via menu commands. When invoked they post an Interaction Markup File in a USENET message. Posters, in turn, can use Agent to automatically scan for these structured requests, and processes them in accordance with rules.

H. Architecture

Essentially, I am proposing an XML based language for automating and formalizing a flow control that already exists between Posters and Collectors. NNTP is simply the transport layer.

Instead of posting plain, unstructured text messages that must be parsed by humans. Agent will allow users to automatically post in a rich, extensible tagging language.

This concept doesn't just apply to swapping digital art. The Interaction Language could be extended to handle Support Requests, Auctions or micro-payments for Digital Art.

Furthermore, the posters don't have to be digital pirates - it could be the artists, themselves. The tagging language would describe how to compensate the artist if you like the content. The key here is we are not asking the consumers to change their behaviour.

Furthermore, the transport layer doesn't have to be NNTP. It could be email or instant messaging. In fact the interaction could begin on a newsgroup then migrate to another transport layer.

I. Precendents

In 2000, the VC world had a great vision that inter-business commerce would all migrate to B2B exchanges. The notion was that you might buy parts from supplier A one day, then discover supplier B the next day based on price or availability, then buy from them.

That's how the stock exchange works. You don't know who had title to your shares when you bought them.

But there were 3 fundamental problems that brought the house down.

- No common interaction language from which to conduct business.
- No way to map the semantics of one vendor's back office into the semantics of another vendor's back office (e.g., the Supply Chain)
- No way to penetrate the corporate firewall.

The solution came through 3 simple technologies called Web Services:

- XML - an extensible textual language for marking up and transforming transactions.
- SOAP - a way to pack up an XML-based transaction and move it over a ubiquitous transport layer.
- HTTP - the ubiquitous port 80 that is always open on the corporate firewall.

In retrospect, it's brilliant because of it's light-weight simplicity:

- Express your transaction as text (XML)
- Put it in a simple transaction wrapper (SOAP)
- Float it into corporate IT (HTTP)

HTTP??????? A stateless protocol that was NEVER IN ITS WILDEST DREAMS thought to be useful for something like transactional processing. At the time, everyone was slogging through CORBA, DCOM, EJB, IIOP and getting nowhere.

So I ask why not News Services? NNTP is the ubiquitous protocol that is already being used to crudely solve a problem that people are passionate about.

Why NTTP? Just like the corporate firewall dilemma, it's a human factors issue! Corporations got hacked to death so they reacted by shutting down all the ports and going VPN - except port 80. So we finally got smart and figured out how to map distributed, object-oriented computing through port 80.

With digital collection, you need anonymity, ubiquity, interaction, and bandwidth. Otherwise you'd just give people read-only access to your hard drive via P2P or you would host an FTP site. Only NNTP provides this. It just lacks a layer of structure that supports the kind of interactions that people are struggling to perform.

J. **Will Digital Markup Catch On?**

Consider yEnc. To me, yEnc shows the hunger for a better process that lies at the core of the USENET patron.

The beauty of our solution is that it doesn't attempt to change the fundamental behaviour of USENET. People like USENET because it's like the Wild West. There is no governing body or intermediary. People don't want that to go away. They just want a better six-shooter.

K. **Agent Collector**

Forte will sell another program, Agent Collector. Agent Collector will compete with other viewers (actually, we might OEM their a product like ACDSee), but Agent Collector will have at it's core an XML database that is used to store and interact with your digital collection.

For example, users could save a newly downloaded series into to their collection by simply dragging the DCML file from Agent and dripping it into Collector.

Right now uses are forced to go through the operating system's filing mechanism which is lame, but flexible. In a hierarchical database, it would be easy to build unique views and playlists of your digital content based on the metadata in DCML.

To integrate with other tools (like PhotoShop), Agent Collector would expose its views to other programs as an explorer window. IOW, the File Open dialog in Photoshop could navigate Agent Collector's database as if it were a directory tree. But the directory trees are really views into the database. One view might be by author. Another one by the newsgroup it was originally downloaded from. Another might be favorites by genre.

One cool thing about Collector is it could instrument how often you consume a file. This could be the basis for a consumption based digital commerce model. For example, I might have 5000 files in my database and I'm willing to spend $100 for music and $50 for images. Figure out how to pay the right artists based on how often I look and listen to these elements.

Collector would also make an ideal data store to replace the bogus My Pictures interface in Windows for storing your digital camera downloads. You are tagging the pictures with same attributes as those that are posted on USENET. In turn, private newsgroups might become a better way to share personal photos with families and members of your affinity groups.

L. **Patent Strategy**

Forte would patent the generic idea of overlaying a transport layer (such as NNTP) with a Digital Interaction Language based on XML. We would put in the public domain the subset that has to do with Digital Collection as it relates to USENET. That part we give to the USENET community and we want it to become a standard. We will protect the part that might lead to digital commerce via USENET. That will be very valuable one day.

16. Digital Collection Platform: Ideas and Issues

A. **Missing Binary Part**

Using a Cost Bias to influence where parts are collected: Free Servers, Bandwidth Capped Servers, Premium Servers

RAR and PAR are attempt to help solve this problem

Filling out the Collection

Protocol for asking for missing parts in a Series or Multi-Part Binary

Notifies you when it's complete

Consider the nuances by Art Genre (Music, Hi Fidelity Mustic, MPG, etc...)

Persue as a Standard?

Is this done by NewsBin?

I want this Binary - who has it.

The return results are surface in agent as a news group (My News)

B. **Collection (and/or Collaboration) Network**

Networked Collection Management System

C. **Trading Digital (or Intangible) Content**

Acting as a Co-op or demand aggregator

Markup Language for describing content and collections and collectors

D. **Anonymity Service**

Integrate with an anonymity service like scuz.net that even spoofs IP addresses for total anonymity.

E. **FAQ Management for USENET**

A team can work on a shared domain (body on knowledge like an FAQ or a Word document)

F. **Serve your Agent Data Store as a News Server in a new breed of P2P**

Using USENET or NNTP as an Individual Publishing Platform

Maintain anonymity

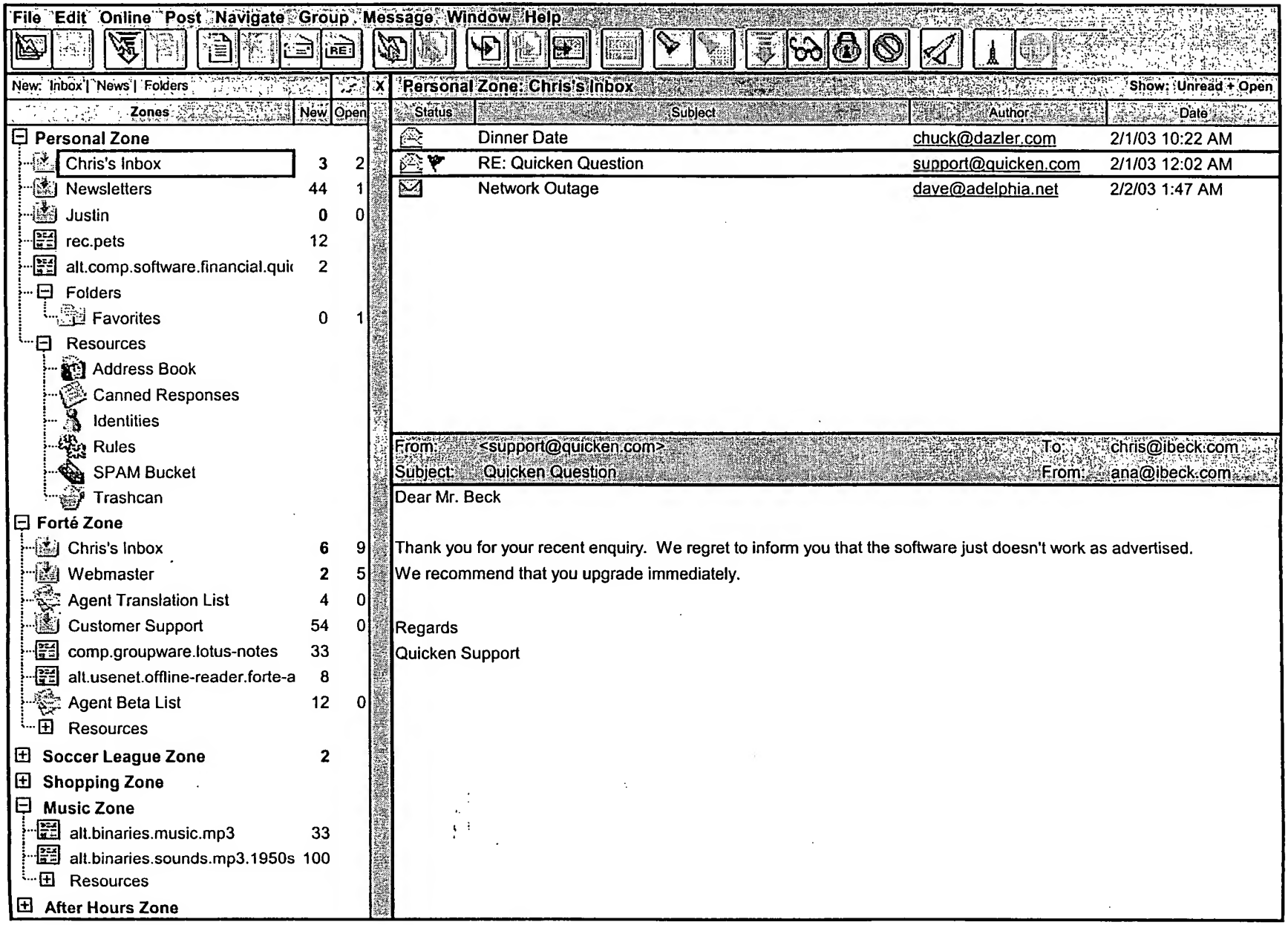
The P2P group looks like an aggregated NNTP server

May get all this with "Agent as a File System Component"

Allow teams of Agent Users to ask for missing parts

Set up an Exchange but don't take title on the goods

Semantics include: I want this file / I have this file


File Edit Online Post Navigate Group Message Window Help
New: Inbox | News | Folders
Zones
New
Open
Personal Zone
Chris's Inbox 3 2
Newsletters 44 1
Justin 0 0
rec.pets 12
alt.comp.software.financial.qui 2
Folders
Favorites 0 1
Resources
Address Book
Canned Responses
Identities
Rules
SPAM Bucket
Trashcan
Forté Zone
Chris's Inbox 6 9
Webmaster 2 5
Agent Translation List 4 0
Customer Support 54 0
comp.groupware.lotus-notes 33
alt.usenet.offline-reader.forte-a 8
Agent Beta List 12 0
Resources
Soccer League Zone 2
Shopping Zone
Music Zone
alt.binaries.music.mp3 33
alt.binaries.sounds.mp3.1950s 100
Resources
After Hours Zone
Personal Zone: Chris's Inbox
Show: Unread + Open
Status
Subject
Author
Date
Dinner Date chuck@dazler.com 2/1/03 10:22 AM
RE: Quicken Question support@quicken.com 2/1/03 12:02 AM
Network Outage dave@adelphia.net 2/2/03 1:47 AM
From: <support@quicken.com>
To: chris@ibeck.com
Subject: Quicken Question
From: ana@ibeck.com
Dear Mr. Beck
Thank you for your recent enquiry. We regret to inform you that the software just doesn't work as advertised.
We recommend that you upgrade immediately.
Regards
Quicken Support